

## REMARKS

Claims 8, 9, 11 through 15 and 21 through 25 are pending in the application.

Claims 8, 21 and 25 have been amended to reflect advantageous sweetener compositions incorporating a binary high intensity sweetener composition consisting essentially of acesulfame K and neotame alone, and to further emphasize that the recited binary sweetener composition beneficially provides the entire amount of high intensity sweetener present within the sweetener composition. Support for this amendment can be found in the Application-as-filed, for example on Page 14, first full paragraph.

Claims 8, 21 and 25 have also been amended to reflect advantageous sweetener compositions incorporating a carbohydrate sweetener consisting essentially of HFCS 42 and sucrose alone in a weight ratio ranging from 20:80 to 80:20. Support for this amendment can be found in the Application-as-filed, for example on Page 5, last partial paragraph through Page 6, first partial paragraph.

Claim 13 has been amended to conform to Claim 8 as-amended. Support for this amendment can be found in the Application-as-filed on Page 7, third full paragraph.

Applicants respectfully submit that this response does not raise new issues, but merely places the above-referenced application either in condition for allowance, or alternatively, in better form for appeal. Reexamination and reconsideration of this application, withdrawal of all rejections, and formal notification of the allowability of the pending claims are earnestly solicited in light of the remarks which follow.

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Rejection Under 35 US § 112

Claim 13 stands rejected over the recitation “neotame.” Claim 13 has been amended to recite “N-[N-(3,3-dimethylbutyl)-L- $\alpha$ -aspartyl]-L-phenylalanine 1-methyl ester” in lieu of “neotame,” in conformance with Claim 8 as-amended. As noted above, support for this amendment can be found in the Application-as-filed. Applicants’ Representative further regrets any inconvenience the foregoing oversight may have caused. Accordingly, Applicants respectfully request withdrawal of the foregoing rejection.

Claims 8, 9, 11 through 15 and 21 through 25 stand rejected over the terms “binary” in combination with the term “comprising”. Without addressing the merits of the rejection and solely to advance prosecution of the case, Claims 8, 21 and 25 have been amended to reflect advantageous binary high intensity sweetener compositions consisting essentially of acesulfame K and neotame alone in which the binary high intensity sweetener composition provides the entire amount of high intensity sweeteners within the sweetener composition. As noted above, support for this amendment can be found in the Application-as-filed. Accordingly, Applicants respectfully request withdrawal of the foregoing rejection.

*The Claimed Invention is*  
Patentable in Light of Art of Record

Claims 8 through 15 and 21 through 24 stand rejected over Simon et al. in view of the combination of United States Patent No. 6,294,214 (US 214) to Calderas et al. and United States Patent No. 6,372,297 (US 297) to Ishida et al.

High Fructose Corn Syrups (“HFCSs”) are common liquid sweeteners formed from corn syrups in which the naturally occurring glucose in the syrup has been isomerized to fructose by the enzyme iosmerase. HFCSs are typically available as either HFCS 42, containing 42% fructose, or HFCS 55, containing 55 % fructose. The taste profiles of these two HFCSs differ

from each other significantly. As correctly alluded to by the Examiner, the taste profiles of HFCS 42 and HFCS 55 both differ from sugar, as well.

HFCSs are commonly incorporated into a wide variety of foods and beverages instead of sugar, primarily for cost reasons. HFCS 42 is more economical in comparison to HFCS 55. However, amongst HFCSs, it is well accepted that the taste quality of HFCS 55 is superior to HFCS 42. Consequently, HFCS 55 is regarded as a sweetness standard in certain regions and product categories.

Unfortunately, HFCS 55 is highly caloric.

High intensity sweeteners ("HISs") are known for use in low calorie foodstuffs. However, individual HISs and blends of HISs alone have a taste profile which differs significantly from HFCS 55. The high intensity sweeteners and heretofore known blends differ in taste characteristics such as sweetness profile, side taste and off-taste characteristics, for example.

Altogether unexpectedly, Applicants have found that blends including both (i) a mixture of sucrose and HFCS 42 and (ii) a mixture of acesulfame K and neotame, i.e. components each known individually to have tastes that each differ significantly from HFCS 55, surprisingly provided a sweetness and taste profile comparable to HFCS 55.

The claimed invention thus includes (i) a carbohydrate sweetener mixture consisting essentially of a mixture of HFCS 42 and sucrose alone along with (ii) a binary high intensity sweetener mixture formed from acesulfame K and neotame alone, in which the acesulfame K is present in at least a 10 :1 weight ratio in comparison to the neotame and the sweetener composition imparts a taste profile comparable to HFCS 55.

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In particularly advantageous embodiments, the carbohydrate sweetener mixture includes HFCS 42 and sucrose in a weight ratio ranging from 20:80 to 80:20, as recited in the claims as-amended.

In particularly advantageous embodiments, the acesulfame K is present in up to a 450: 1 ratio in comparison to neotame, as recited in Claim 13.

For example, the acesulfame K may beneficially be present in amounts of greater than 97 weight %, relative to the total amount of acesulfame K and neotame, as reflected in Claim 25.

None of the cited references teaches or suggests the claimed invention, in which a particular carbohydrate sweetener mixture along with a particular high intensity sweetener mixture imparts a taste profile comparable to HFCS 55.

Applicant respectfully reiterates that Simon is directed to reduced calorie soft drinks designed to replace sugar based soft drinks. (Pg. 332, first partial paragraph and fourth full paragraph (noting the amounts needed to make the solution “just as sweet as a 10% sucrose solution”). Simon initially notes that HISs impart “certain and different off-tastes such as bitter and sharp metallic flavours.” (Pg. 331, first full paragraph). Although providing an extensive review of various high intensity sweeteners, Simon does not teach or suggest the use of neotame.

Simon then broadly discloses the concept of a combination of intense sweeteners with a single simple sugar. (Pg. 331 and Pg. 332 at Figure 10). Simon goes on to provide a table, Figure 11, disclosing “the most suitable combinations” of a mixture of HISs with a single carbohydrate “with respect to taste quality.” (Page 332). Although extensively considering a number of carbohydrate sweeteners, Simon is altogether silent as to HFCS 55.

In Figure 11, Simon (after extensive study) expressly teaches a composition that incorporates acesulfame K into a quaternary HIS blend which further includes saccharin,

cyclamate, and aspartame, and that additionally incorporates a single carbohydrate. (Page 332, Figure 11). Simon's only further teaching directed to acesulfame K indicates its use in an approximately equal amount with an altogether different HIS, that is likewise combined with a single carbohydrate to produce a "sugary type" flavor. (Page 333, Figure 12 and Page 332, 7<sup>th</sup> Paragraph). Simon does clearly evidence, however, that individual components within a sweetener mixture have an altogether unpredictable effect upon the resulting taste.

Applicants respectfully reiterate that Simon does not teach or suggest the claimed invention.

Applicant respectfully reiterates that Simon, directed to sugar-based soft drink replacements, does not teach or suggest the recited sweetener compositions with a taste profile comparable to HFCS 55. In fact, Simon is altogether silent as to HFCS 55, although he extensively investigated a wide variety of carbohydrate sweeteners

Simon, likewise altogether silent as to neotame, further does not teach or suggest the recited binary HIS mixtures including acesulfame K and neotame alone. Simon instead expressly teaches acesulfame K with altogether different HIS sweetener(s).

Simon thus can not teach or suggest such recited HIS mixtures in which acesulfame K is present in at least a 10:1 weight ratio in comparison to neotame.

Simon, solely directed to use of a single carbohydrate, likewise does not teach or suggest the recited mixture of carbohydrates, much less the recited mixture of HFCS 42 and sucrose.

Simon thus most certainly does not teach or suggest the recited mixture of HFCS 42 and sucrose present in a weight ratio of 20:80 to 80:20, as recited in the claims as-amended.

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Simon further can not teach or suggest such sweetener compositions in which the acesulfame K is present in up to a 450: 1 ratio in comparison to neotame, as recited in Claim 13. As noted above, Simon at best teaches an approximately equal ratio of HISs.

Nor does Simon teach or suggest advantageous inventive sweetener compositions in which the acesulfame K is present in amounts of greater than 97 weight %, relative to the total amount of acesulfame K and neotame, as recited in Claim 25.

Based on the foregoing, Applicant respectfully reiterates that the claimed invention is patentable in light of Simon, considered either alone or in combination with the remaining art of record.

US 214 likewise fails to teach or suggest the claimed invention.

Applicant respectfully submits that US 214 is directed to improving the microbial stability of non-carbonated beverages. (Col. 1, lines 10 – 12). The “essential elements” of US 214 include a preservative and a polyphosphate. (Col. 3, lines 1 - 28). US 214 merely generically notes that its beverages can contain any of a laundry list of natural sweeteners or “optional” artificial sweeteners. (Col. 8, lines 22 – 64).

The natural sweetener may be present in amounts of up to 20%. (Col. 8, lines 28 – 31). US 214 is silent as to the recommended amounts of any optional artificial sweeteners, however. The working examples of US 214 indicate the use of HFCS 55 alone, in an amount of about 13 %. (Col. 10, line 63 – Col. 11, line 21).

US 214, directed to antimicrobial stability, does not teach or suggest the recited sweetener compositions, much less that the recited sweetener compositions formed from a mixture of non-HFCS 55 carbohydrate sweeteners and a mixture of HISs would provide a taste profile comparable to HFCS 55. US 214 instead expressly teaches the direct incorporation of HFCS 55.

US 214 further does not teach or suggest the recited binary HIS mixtures including acesulfame K and neotame alone. US 214 merely generically teaches a laundry list of optional artificial sweeteners.

US 214 thus can not teach or suggest such recited HIS mixtures in which acesulfame K is present in at least a 10:1 weight ratio in comparison to neotame.

US 214, generically noting “mixtures” of any of a laundry list of sweetener sugars, likewise does not teach or suggest the recited mixture of HFCS 42 and sucrose.

US 214 thus most certainly does not teach or suggest the recited mixture of HFCS 42 and sucrose present in a weight ratio of 20:80 to 80:20, as recited in the claim as-amended.

US 214 further can not teach or suggest such sweetener compositions in which the acesulfame K is present in up to a 450: 1 ratio in comparison to neotame, as recited in Claim 13.

Nor does US 214 teach or suggest advantageous inventive sweetener compositions in which the acesulfame K is present in amounts of greater than 97 weight %, relative to the total amount of acesulfame K and neotame, as recited in Claim 25.

Based on the foregoing, Applicant respectfully reiterates that the claimed invention is patentable in light of US 214, considered either alone or in combination with the remaining art of record.

US 279 does not cure the deficiencies in the foregoing references.

US 279 is directed to neotame blends having improved dissolution times. (Col. 1, lines 58 – 60). US 279 indicates that acesulfame K may be included in its blends in amounts as low as

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10 wt %. (Col. 2, lines 3 – 6). US 279 expressly cautions that the incorporation of excessive amounts of acesulfame K decreases the optimal dissolution rate of neotame. (Col. 3, lines 50 – 52).

US 279 further teaches that acesulfame K is known to have a strong “early” taste, a bitter taste, astringent taste and peculiar taste, and is “inferior” to aspartame. (Col. 1, lines 34 – 37). US 279 teaches that neotame also suffers from an “extremely weak” early taste, as well as a strong astringent taste. (Col. 1, lines 18 – 26).

US 279 generically discloses that its compositions may further include “diluent” and “excipients,” such as sucrose, glucose “or the like.” (Col. 4, lines 18 – 20).

US 279 expressly teaches that its blends are intended to provide the sweetness of sugar, noting that “[s]ucrose is generally regarded as the standard for evaluating the properties or characteristics of the quality of sweetness.” (Col. 1, lines 27 – 30). Curiously, US 279 does not provide any taste data for its compositions. US 279 instead merely indicates that its compositions provide “a sweetener excellent in quality of sweetness.” (Col. 7, lines 58 – 62). Nevertheless, US 279 further indicates that additional artificial sweeteners may be required to improve the quality of sweetness. (Col. 4, lines 8 – 15).

Applicants respectfully reiterate that US 279, expressly noting sucrose as the sweetness standard, similarly fails to teach or suggest the recited sweetener compositions imparting a taste profile comparable to HFCS 55.

US 279, generically noting “diluent” and “excipients,” likewise does not teach or suggest the recited mixture of HFCS 42 and sucrose.

US 279 thus most certainly does not teach or suggest the recited mixture of HFCS 42 and sucrose present in a weight ratio of 20:80 to 80:20, as recited in the claims as-amended.



Nor does US 279, solely directed to dissolution rates, teach or suggest that sweetener compositions incorporating the recited carbohydrate sweetener mixture and ratio along with a HIS mixture including acesulfame K and neotame alone would impart a taste profile comparable to HFCS 55. US 279 instead expressly teaches that additional artificial sweeteners would be required for any improvement in sweetness in comparison to its sucrose-target.

US 279 further can not teach or suggest such sweetener compositions in which the acesulfame K is present in up to a 450: 1 ratio in comparison to neotame (i.e. 99.8 wt % acesulfame K), as recited in Claim 13. Applicants respectfully reiterate that US 279 instead clearly teaches away from such advantageous embodiments, by indicating that excessively high amounts of acesulfame K are detrimental to dissolution rates and further that acesulfame K is known to impart a number of displeasing taste qualities, such as a bitter taste and the like.

US 279 thus does not teach or suggest that advantageous inventive sweetener compositions in which acesulfame K is present in amounts of greater than 97 weight %, relative to the total amount of acesulfame K and neotame, would impart a taste profile comparable to HFCS 55, as recited in Claim 25. As noted above, US 279 instead clearly teaches away from such advantageous embodiments.

Based on the foregoing, Applicant respectfully reiterates that the claimed invention is patentable in light of US 279, considered either alone or in combination with the remaining art of record.

There would have been no motivation to have combined these references. Merely because the references can be combined is not enough, there must still be a suggestion. MPEP 2143.01 (section citing Mills).

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Simon is broadly directed to reduced-calorie beverages having the taste profile of sucrose-based beverages, specifically teaching the combination of cyclamate with HFCS. US 214 addresses the microbial stability of beverages using a combination of preservatives and polyphosphate. US 279 improves the dissolution rate of a particular artificial sweetener. These are altogether different problems solved, to say the least.

However, even if one were to combine the cited references (which Applicant did not), the recited invention would not result. Specifically, the claimed invention does not represent “the predictable use of prior art elements according to their established functions.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740 (2007). In contrast to the urgings of the outstanding Office Action, Applicant respectfully submits that none of the recited components would have been expected to provide a taste profile comparable to HFCS 55.

None of the cited references even teaches or suggests alternative compositions imparting a taste profile of HFCS 55. The primary reference instead clearly attempts to provide beverages having the taste profile of sucrose. The secondary references are either silent as a target taste or likewise indicate a sucrose-target.

Nor does the combination of references in any way teach or suggest that a combination of the recited carbohydrate sweeteners, i.e. HFCS 42 and sucrose, could be used to impart the taste profile of HFCS 55. In contrast to the urgings of the outstanding Office Action on Page 4, the use of a combination of HFCS 42 and sucrose was not taught or suggested by either Simon or US 214 or, for that matter, US 279. Simon, after intensive study, merely incorporated a single carbohydrate sweetener within his compositions. US 214 merely broadly notes that any of a number of generic carbohydrate families may be used in conjunction with its preservative composition, and specifically teaches use of HFCS 55 alone. US 279 similarly broadly notes that any of a number of generic carbohydrate families may be used, and provides no working example including carbohydrate. Applicant thus respectfully submits that the Office Action’s apparent

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urgings on Page 5 and Page 8 that use of a combination of HFCS 42 and sucrose is “conventional” is merely conjecture.

The combination, each silent as to a mixture of HFCS 42 and sucrose, thus most certainly does not teach or suggest the recited mixture of HFCS 42 and sucrose present in a weight ratio of 20:80 to 80:20, as recited in the claims as-amended.

Nor does the combination of references teach or suggest that the recited sweetener compositions formed from (i) a mixture of the carbohydrate sweeteners HFCS 42 and sucrose and (ii) a binary mixture of acesulfame K and neotame would impart a taste profile comparable to HFCS 55. The Office Action’s urgings that that “the prior art teaches the combination of sweeteners as recited by the applicant” are purely conjecture, at best. As noted above, none of the cited art teaches or suggests the mixture of the particular recited carbohydrate sweeteners, much less that such a carbohydrate mixture further including acesulfame K and neotame would result in a composition having a taste comparable to HFCS 55.

The combination further does not teach or suggest such sweetener compositions including a mixture of HFCS 42 and sucrose in which the acesulfame K is present in up to a 450: 1 ratio in comparison to neotame, as recited in Claim 13.

Nor does the combination teach or suggest advantageous inventive sweetener compositions including a mixture of HFCS 42 and sucrose in which the acesulfame K is present in amounts of greater than 97 weight %, relative to the total amount of acesulfame K and neotame, as recited in Claim 25.

Applicants respectfully reiterate that there simply would have been no motivation to have chosen the claimed components or amounts to produce a sweetener composition having a taste profile comparable to HFCS 55 based on the art of record, considered either alone or in combination.

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Based on the foregoing, Applicant respectfully submits that the claimed invention is patentable in light of Simon, US 214 and US 279, considered either alone or in combination.

As evidenced by the art of record, conventional wisdom to date has generally focused upon various mixtures of high intensity sweeteners in combination with a single carbohydrate to produce a replacement for sucrose. In contrast to the urgings of the outstanding Office Action, significant inventive work was required for Applicant to determine that a mixture of particular carbohydrate sweeteners and a mixture of particular high intensity sweeteners could be used to produce a taste profile comparable to HFCS 55. Applicant respectfully reiterates that it was altogether unexpected that a taste profile comparable to HFCS 55 would result from the recited combination.

Applicant further respectfully reiterates that "obvious to try" is not the standard for patentability. In particular, none of the cited references gives any indication as to which parameters are critical in the provision of a taste profile comparable to HFCS 55 and absolutely no direction as to which of an almost infinite number of combinations is likely to be successful.

### **CONCLUSION**

It is respectfully submitted that Applicants have made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all of pending Claims 8, 9, 11 through 15 and 21 through 25 are in condition for immediate allowance. It is requested that the Examiner telephone the undersigned if any questions remain to expedite examination of this application.

It is not believed that fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional fees are necessary to allow consideration of this paper, the fees are hereby authorized to be charged to Deposit Account No. 50-2193.

Application No.: 10/821,003

Filed: April 8, 2004

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